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ABSTRACT

In the summer of 1975 a program to improve reading and mathematics skills for pregnant school age girls was implemented in New York City. The program was designed to provide continuity of instruction in reading and mathematics from spring to fall for girls who were at least two years behind in reading and mathematics achievement. The summer program was initiated at four schools, one each in the Bronx, Brooklyn, Manhattan, and Queens. Each of the schools provided instruction for pregnant girls during the normal school year. During the summer, these schools provided corrective instruction for about three hours in the morning. Participation in the program was voluntary. Students attended classes in corrective reading, corrective mathematics, and a class that reinforced instruction in the previous classes through instruction in the use of business machines such as the typewriter, and keypunch. The program used a diagnostic and prescriptive approach to instruction. The program tests used for diagnosis and mastery testing were used for program evaluation. Analysis of the classroom testing data indicated that about 80% of the students in reading and 85% of the students in math, achieved mastery in at least one instructional objective. Further analysis showed that many students had mastered a significant number of objectives prior to instruction and that some teachers administered few objective tests to their students. One reason for this was due to the relatively low levels of reading and mathematics skills measured by the test materials. (Author/AM)

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EVALUATION REPORT

Function No. 09-61610

Corrective Reading and Corrective Mathematics Instruction of Pregnant School Age Girls

Summer 1975

Dr. Gary Echternacht

An evaluation of a New York City school district educational project funded under Title I of the Elementary and Secondary Education Act of 1965 (PL89-10) performed for the Board of Education of the City of New York for the summer of 1975.

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Chapter I

Program Description

The Summer 1975 Corrective Reading and Corrective Mathematics Instruction of Pregnant School Age Girls was designed to provide continuity of instruction in reading and mathematics from spring to fall for girls who were at least two years behind in reading and mathematics achievement. Funded under ESEA Title I, the program was aimed at minimizing the typical regression in reading and mathematics over the summer, and at the same time, raising the reading and mathematics levels of the program participants. The summer program was initiated at four schools, one in each of the Boroughs of Bronx, Brooklyn, Manhattan, and Queens. Each of the schools provided instruction for pregnant girls during the normal school year. During the summer, these schools provided in the morning for about three hours 28 days of corrective instruction.

All of the girls in the program were either pregnant or had recently delivered, as students who had delivered were allowed to complete the school term at the school. Although participation in the program was voluntary, teachers and counselors at the school during the normal school year encouraged their students who were behind in either reading or math to attend the summer corrective session. All students had to be at least two years behind in grade equivalents in either reading or mathematics on the Metropolitan Achievement Test (MAT). The majority of students were in grades 9, 10, and 11 and were attending the same school for pregnant girls in the spring. Students who entered the school during the summer were first given the MAT to determine

their reading and mathematics grade equivalent scores; scores obtained during the prior school year were used for those students who previously entered the school.

The general objective of the summer program was to raise the reading and mathematics grade of students in the program. More specifically, the major program goal was for 70 percent of the participants to achieve mastery of at least one instructional objective.

In order to accomplish this goal students attended classes in corrective reading, corrective mathematics, and a class that reinforced instruction in the previous classes through instruction in the use of business machines such as the typewriter, keypunch, and desk calculator. Although most students remained in school for the full three class periods, some students took only corrective reading because: (a) they had jobs that did not enable them to attend school for the full morning session; and (b) their reading grade equivalent was sufficiently low that achieving the 9.0 level needed for graduation required special emphasis on corrective reading. A guidance counselor was available to discuss problems and aid the girls in educational planning. A social worker was available to aid the girls in arranging medical and child care, as well as aiding in solving social problems.

The specific weaknesses of the students were diagnosed through two diagnostic-prescriptive tests that were also used for evaluation; the McGuire-Bumpus Diagnostic Test of Reading Comprehension (CROFT) was used for reading and Media Research Associates' Basic Arithmetic Skills Evaluation (BASE) was used for mathematics. As a result of these diagnostic tests, students who were weak on the tested objectives engaged in specially prescribed activities designed to correct the tested deficiencies. In reading, these activities included: (a) working with reading exercises

to improve word-attack skills and various comprehension skills; (b) engaging in independent reading; (c) using a reading lab for independent study; and (d) using the typewriter to further develop and reinforce reading skills. In mathematics the activities included: (a) practice and drill in computation, mathematical concepts, and problem solving; and (b) use of the desk calculator in solving business and consumer problems.

Classes were small and three teacher aides were assigned to help the four teachers at each school. In most cases there were no more than ten students in each class and at some schools the teacher-pupil ratio was as low as 1:3 in some classes.

Chapter II

Evaluative Procedures

As stated in the evaluation design, the evaluation objectives were given as,

1. "Evaluation Objective #1: To determine if, as a result of participation in the program, 70 percent of the pupils master at least one instructional objective which prior to the program they did not master."

2. "Evaluation Objective #2: To determine, as a result of participation in the program, the extent to which pupils demonstrate mastery of instructional objectives."

3. "Evaluation Objective #3: To determine the extent to which the program, as actually carried out, coincided with the program as described in the Project Proposal."

The extent to which the first two objectives were accomplished was determined by analyzing results from the two diagnostic-prescriptive tests, the reading test CROFT and the mathematics test BASE. The resulting MAT grade equivalent scores, given either in the spring or at the time of entry to the school, were used to determine in which of the grade levels of the two tests a student should begin. The CROFT tests were designed for grades 1 through 6; the BASE tests were designed for grades 1 through 7.

The testing programs for both reading and mathematics were similar and somewhat complex, involving substantial clerical work on the part of teachers. For example, teachers first used the student's MAT score to determine what level of the test the student should receive. If a student's MAT grade equivalent in mathematics were 6.2, then the teacher would assign BASE level 6 to the student. The student then would be assigned some specified

number of items from the BASE level 6 test, and the test would be administered by either the teacher or teaching aide, using the tape cassette that accompanied BASE level 6 or orally themselves.[1] The tests were administered individually, in small groups, and in some instances to whole classes periodically throughout the summer. Teachers then scored the test items and recorded the results on an individual profile sheet, provided by the test publisher, that indicated which of the test publisher's objectives a student had mastered and which she had failed to master.[2] The teacher next recorded the results of this "entry" or pre-testing on a class evaluation record that contained the names of all the students in the class and a list of instructional objectives developed by the New York State Department of Education. In order to record the results on the class evaluation record, the teacher had to use a table that gave the correspondence between the test publisher's objectives and those of the State Department.

The table giving the correspondence between objectives had been developed for CROFT. On the other hand, mathematics teachers were instructed to make their own correspondence. Teachers recorded an "E" on the class evaluation record for a particular instructional objective if the student did not show mastery--i.e., the student missed more than two items--and recorded an "M" where the student did show mastery.

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[1] Most of the mathematics teachers reported that the cassette administration tapes were ineffective, and they did not use them throughout the summer session.

[2] Typically, there were four items for each instructional objective in BASE. A student was considered to have demonstrated mastery of the objective if she correctly answered three of the four items. A similar procedure was used for CROFT.

After completing part of the entry testing, students were assigned work relating to the test publisher's instructional objectives for which they did not achieve mastery. Teachers and teaching aides worked individually with the students until the teacher believed that the student had a firm grasp of the instructional objective. At that time, the teacher or teaching aide administered the "mastery" or post-test, again individually or in small groups.[3] If the student showed mastery of the instructional objectives on this testing, the teacher entered an "M" next to the "E" on the class evaluation record to indicate that the student had received instruction and mastered the objective. If the student failed on the second testing, she was assigned more work and tested a third time. This process was repeated as often as necessary. Schools received the CROFT and BASE tests on July 9, began testing on July 10, and continued testing until August 7.

The main limitation of the tests used in the evaluation was that they were designed for elementary school children and were being used with junior and senior high school aged girls. For example, a student could be in grade 10 and have a reading grade equivalent score of 8.0 which would qualify her for the summer program, yet there would be no appropriate level of CROFT for that student, as the CROFT tests cover only grades 1 through 6. This was also a problem in BASE although reading teachers voiced more concern over the issue of test appropriateness. In cases where students were above the highest grade level of the test, they were not tested <u>at all</u> as a rule.

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[3]The mastery or post-tests were parallel forms of the entry test.

At the conclusion of the summer program the class evaluation records were gathered and sent to the evaluator for coding, keypunching, and subsequent data analysis. The data analyses involved obtaining a number of distributions including: (a) the distribution of students failing to achieve mastery prior to instruction and not receiving sufficient instruction to achieve mastery; (b) the distribution of students achieving mastery prior to instruction; (c) the distribution of student mastery resulting from instruction; (d) the distribution of the number of objectives mastered after instruction; and (e) the distribution of the percentage of students achieving various levels of mastery. The results of these analyses are presented in the next chapter.

The discrepancy analysis specified in objective three was accomplished by the evaluator through site visits to each of the program schools during the summer term. A checklist was developed from the Program Proposal that included all of the essential program components. During the interviews conducted on site, school personnel were asked whether the program components had arrived in a timely fashion and whether the appropriate components were functioning properly. A copy of the checklist appears in the Appendix.

Chapter III

Findings

The first evaluation objective was to determine if, as a result of participation in the program, 70 percent of the pupils mastered at least one instructional objective which prior to the program they had not mastered. The number of instructional objectives for which students failed to show mastery on the pre-test and subsequently demonstrated mastery on the post-test was determined for each student in reading and mathematics. The distribution of the number of objectives mastered as a result of instruction appears in Table 1.

Table 1

Distribution of the Number of Instructional Objectives Mastered after Instruction

Number of Instructional Objectives Mastered	Reading (N = 246)		Mathematics (N = 202)	
	No. of Pupils	Percent	No. of Pupils	Percent
over 10	19	7.7	0	0.0
10	3	1.2	2	1.0
9	4	1.6	0	0.0
8	3	1.2	13	6.4
7	5	2.0	6	3.0
6	4	1.6	14	6.9
5	9	3.7	18	8.9
4	24	9.8	34	16.8
3	20	8.1	24	11.9
2	47	19.1	23	11.4
1	57	23.2	37	18.3
0	51	20.7	31	15.3

The data in the table shows that the program successfully achieved the first evaluation objective in both reading and mathematics. About 80 percent of the students enrolled in reading achieved mastery in at least one instructional objective that they had not mastered prior to instruction, and about 85 percent of students enrolled in mathematics achieved a similar mastery in at least one instructional objective. Students achieved slightly more objecti es in mathematics.[4] About 60 percent of the students mastered between one and four instructional objectives in reading and between one and six objectives in mathematics.

Table 1 also shows the difference in the number of students enrolled in reading and mathematics classes. Forty-four more students were enrolled in reading than in mathematics. This difference was due, according to counselors and teachers-in-charge, to (a) some students working and being able to attend only one class, and (b) the encouragement given to students by the school staff to improve their reading ability.[5]

The second evaluation objective was to determine, as a result of participation in the program, the extent to which students demonstrated mastery of the instructional objectives. This was approached through four analyses. First, the extent that students had mastered the State Education Department's (SED) instructional objectives prior to the program was determined.

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[4]The average number of objectives mastered as a result of instruction was 3.0 for reading and 3.1 for mathematics. Standard deviations were 3.5 and 2.4 for reading and mathematics, respectively.

[5]During site visits some teachers and counselors indicated that they would encourage students to attend the summer corrective classes even if they only took the reading class. Improvement in reading was of special concern primarily because a student had to achieve an 8.0 grade equivalent score on the MAT in order to graduate.

Second, the number of instructional objectives each individual failed on the pre-test was determined. These analyses were followed by determining the extent to which students mastered each of the SED objectives, and finally by determining the level of mastery for each student.

Table 2 gives the distribution of student mastery of the SED instructional objectives prior to instruction. The "percentage of mastery of instructional objectives" column numbers were determined by finding the proportion of the SED instructional objectives on which a student showed mastery on the pre-test. The table indicates that the majority of students in reading demonstrated mastery on the pre-test for less than 7.5 percent of the SED objectives. In mathematics, more than 85 percent of the students demonstrated mastery on less than 15 percent of the objectives. A number of factors need to be taken into account in interpreting the data in the table. For example, as will be shown later, not every student was tested on every objective. This was especially true for mathematics where the BASE tests could test only a maximum of 21 of the 73 SED objectives in mathematics. Stated in terms of the maximum number of objectives tested, 46 percent of the students in mathematics demonstrated mastery on 26 percent or fewer of the objectives tested by BASE. Perhaps a better way to state this finding is that 54 percent of the students in mathematics demonstrated mastery on more than 73 percent of the objectives measured by BASE, prior to the program.

Table 2

Distribution of Pupil Mastery of Instructional Objectives
Prior to Instruction

Percentage of Mastery of Instructional Objectives	Reading (N = 246)		Mathematics (N = 202)	
	No. of Pupils	Percent	No. of Pupils	Percent
over 37.5	1	0.4	0	0.0
30.0 - 37.5	2	0.8	1	0.5
22.5 - 30.0	8	3.2	11	5.5
15.0 - 22.5	5	2.0	15	7.5
7.5 - 15.0	86	35.0	82	40.7
0.0 - 7.5	144	58.5	93	46.1

The problem was less acute in reading as the CROFT tests measured most of the SED objectives. Nonetheless, most reading teachers administered only a portion of the tests of SED objectives.[6]

Table 3 gives the distribution of the number of objectives failed on the pre-test for which the student did not achieve mastery during the program. Absence and late testing were the main reasons reported by teachers for students failure to achieve mastery on objectives that they failed in pre-testing. The table shows that a substantial number (46.3 percent) of the students in reading had demonstrated mastery on each objective for which they were tested by the end of the program -- i.e., they had not indicated failure in any objectives at the end of the session, which is recorded as zero objectives failed in Table 3. The percentage completing mastery in those objectives on which they were tested in mathematics was less, 33.7 percent, though nonetheless substantial. One of the reasons for such a substantial number of students in reading showing mastery in all of the objectives on which they were tested can be traced to the nature of the CROFT tests. The CROFT tests were designed for students in grades 1 through 6, and some teachers

[6] Examination of the class evaluation records indicated that at one extreme one teacher administered tests for 41 of the 44 SED instructional objectives while at the other a second teacher administered tests for 7 of the objectives.

believed they were inappropriate in terms of content for the older girls even though their reading grade equivalents were lower than 7.0. Some teachers used CROFT for only part of the term since the majority of their students completed the objectives appropriate to their age and abilities before the end of the program.[7]

Table 3

Distribution of Pupil Non-Mastery on Pre-Test and Not Showing Mastery on Post-Test Follow-up

Number of Instructional Objectives Failed	Reading (N = 246)		Mathematics (N = 202)	
	No. of Pupils	Percent	No. of Pupils	Percent
10 and more	0	0.0	4	2.0
9	4	1.6	4	2.0
8	4	1.6	5	2.5
7	1	0.4	3	1.5
6	3	1.2	7	3.5
5	11	4.5	8	4.0
4	13	5.3	11	5.0
3	27	11.0	19	9.4
2	22	8.9	20	9.9
1	46	18.7	54	26.7
0	114	46.3	68	33.7

Table 4 shows the ratio and percentage of students who mastered each instructional objective as a result of instruction in reading. For example, the table shows that one student failed the pre-test for objective 2-1-1 and that same student later achieved mastery on the objective. Of course, other

[7] For example, at one school only five of 80 girls had not completed mastery of the objectives on which they were tested. It was reported that most of these failures to achieve mastery were due to student absence at school.

students were tested on objective 2-1-1, but each of those students demonstrated mastery on the pre-test and do not appear in the table. Thirteen students failed objective 2-1-2 on the pre-test, and 12 of those students, or 92.3 percent, later demonstrated mastery on the post-test. Table 5, which can be interpreted exactly as Table 4, gives the same results with mathematics objectives.

Table 4

Distribution of Pupil Mastery by Instructional Objective
As a Result of Instruction in Reading

Instructional Objective	Ratio of #Pupils Achieving Mastery / #Pupils Attempting Mastery	Percent of Mastery
Phonetic Analysis		
2-1-1	1/1	100.0
2-1-2	12/13	92.3
2-1-3	6/6	100.0
2-1-4	29/32	90.6
2-1-5	27/34	79.4
2-1-6	16/22	72.7
2-1-7	6/9	66.7
2-1-8	5/8	62.5
2-1-9	9/18	50.0
2-1-10	0/1	--
Structural Analysis		
2-2-1	10/14	71.4
2-2-2	32/39	82.0
2-2-3	14/18	77.8
2-2-4	51/68	75.0
2-2-5	31/49	63.3
2-2-6	2/10	20.0
2-2-7	0/0	--
2-2-8	1/4	25.0
Vocabulary		
2-3-1	22/25	88.0
2-3-2	1/1	100.0
2-3-3	6/11	54.5
2-3-4	27/32	84.4
2-3-5	26/35	74.3
2-3-6	10/14	71.4

Table 4 (Con't)

Instructional Objective	Ratio of #Pupils Achieving Mastery / #Pupils Attempting Mastery	Percent of Mastery
Comprehension		
2-4-1	21/49	42.8
2-4-2	35/59	59.3
2-4-3	34/62	54.8
2-4-4	57/100	57.0
2-4-5	15/19	79.0
2-4-6	46/89	51.7
2-4-7	8/12	66.7
2-4-8	24/41	58.5
2-4-9	42/81	51.8
2-4-10	4/6	66.7
2-4-11	3/3	100.0
2-4-12	4/8	50.0
2-4-13	16/25	64.0
Study Skills		
2-5-1	22/23	95.6
2-5-2	5/8	62.5
2-5-3	24/30	80.0
2-5-4	2/8	25.0
2-5-5	7/11	63.6
2-5-6	23/25	92.0
2-5-7	3/5	60.0

Table 5

Distribution of Student Mastery by Instructional Objective
As a Result of Instruction in Mathematics

Instructional Objective	Ratio of #Students Achieving Mastery / #Students Attempting Mastery	Percent of Mastery
Numbers and Operations		
1-1-1	67/80	83.7
1-1-2	71/90	78.9
1-1-3	61/100	61.0
1-1-4	28/46	60.9
1-1-5	0/0	--
1-1-6	28/43	65.1
1-1-7	50/73	68.5
1-1-8	37/61	60.7
1-1-9	46/79	58.2
1-1-10	56/92	60.8
1-1-11	0/0	--
1-1-12	0/0	--
1-1-13	0/0	--

Table 5 (Con't)

Instructional Objective	Ratio of #Students Achieving Mastery / #Students Attempting Mastery	Percent of Mastery
Numbers and Operations (Continued)		
1-1-14	0/0	—
1-1-15	0/0	—
1-1-16	21/35	60.0
1-1-17	0/0	—
Geometry		
1-2-1	0/0	—
1-2-2	9/20	45.0
1-2-3	0/0	—
1-2-4	0/0	—
1-2-5	37/77	48.1
1-2-6	8/19	42.1
1-2-7	0/0	—
1-2-8	15/46	32.6
1-2-9	0/0	—
1-2-10	0/0	—
1-2-11	0/0	—
1-2-12	0/0	—
Measurement		
1-3-1	0/0	—
1-3-2	38/74	51.4
1-3-3	0/0	—
1-3-4	0/0	—
1-3-5	3/3	100.0
1-3-6	7/11	63.6
1-3-7	0/0	—
1-3-8	0/0	—
1-3-9	0/0	—
Applications of Math		
1-4-1	0/0	—
1-4-2	0/0	—
1-4-3	0/0	—
1-4-4	0/0	—
1-4-5	0/0	—
1-4-6	0/0	—
1-4-7	0/0	—

Table 5 (Con't)

Instructional Objective	Ratio of #Students Achieving Mastery / #Students Attempting Mastery	Percent of Mastery
Statistics & Probability		
1-5-1	0/0	--
1-5-2	0/0	--
1-5-3	0/0	--
1-5-4	0/0	--
1-5-5	0/0	--
1-5-6	0/0	--
Sets		
1-6-1	0/0	--
1-6-2	0/2	--
1-6-3	0/0	--
1-6-4	0/0	--
1-6-5	0/0	--
1-6-6	13/26	50.0
1-6-7	0/0	--
1-6-8	0/0	--
1-6-9	0/0	--
Functions & Graphs		
1-7-1	0/0	--
1-7-2	0/0	--
1-7-3	0/0	--
1-7-4	0/0	--
1-7-5	0/0	--
Logical Thinking		
1-8-1	0/0	--
1-8-2	0/0	--
1-8-3	0/0	--
1-8-4	0/0	--
1-8-5	0/0	--
1-8-6	0/0	--
Problem Solving		
1-9-1	1/5	20.0
1-9-2	35/64	54.7

Table 4 has a number of interesting features. For example, the table shows that almost every objective was tested to some extent. Objective achievement appeared relatively high in phonetic analysis, structural analysis, vocabulary, and study skills where, with the exception of some objectives where few students were tested, over 70 percent of those failing an objective on the pre-test later showed mastery on the post-tests in these areas.[8] On the other hand, the results for reading comprehension were less successful. On only two of 13 objectives did the attainment of student mastery exceed 70 percent. Special difficulty was noted for objectives 2-4-1, 2-4-6, and 2-4-9 where fewer than 52 percent of the students failing these objectives on the pre-test later showed mastery.[9]

Table 5 shows the limited scope of the objectives in the BASE tests with respect to the SED mathematics objectives. There were no BASE tests available for any of the objectives dealing with applications of mathematics, statistics and probability, functions and graphs, and logical thinking. Most of the instruction was confined to simple operations -- viz, addition, subtraction, multiplication and division. Of the ten objectives that were tested in numbers and operations, only one objective attained less than 60 percent student mastery as a result of instruction. Performance appeared uniform over these objectives as on only two of the ten objectives did students achieve over 70 percent mastery. In the other areas tested, student mastery did not fare as well as it did for numbers and operations. Student

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[8]Achievement data in the MIR also bears this out. Success appears to be much easier to achieve in phonetic analysis, structural analysis, vocabulary, and study skills than in reading comprehension. The MIR appears in the Appendix.

[9]Objective 2-4-1 refers to fantasy/reality qualities of sentences, 2-4-6 refers to identifying correct descriptions of written scenes, and 2-4-9 refers to identifying restatements of sequences of events.

mastery as a result of instruction was consistently less than 50 percent in geometry and consistently less than 60 percent for objectives failed by students in measurement and problem solving. It should be emphasized that not every student was tested and instructed on every instructional objectives. An attempt was made to individualize instruction, by assigning students work in only those areas that pre-tests had indicated weaknesses.

One of the best ways of indicating the extent to which students achieve mastery of instructional objectives as a result of instruction in the program is to examine the students' percentage level of mastery. Percentage level of mastery simply means the proportion of the objective a student fails on the pre-test that she later demonstrates mastery on the post-test. For example, if a student failed 10 objectives on the pre-tests and, as a result of instruction, demonstrated mastery on seven of those objectives, her level of mastery would be 70 percent. Table 6 shows the distribution of the percentage level of mastery of instructional objectives that were taught in the program. The table shows three substantial clusters for each area. There is a large portion (101 in reading, 63 in mathematics) of students who master every objective for which they receive instruction. There is a smaller cluster of students in each area that fail to master any objectives (51 in reading, 31 in mathematics). The third cluster is spread out, rather uniformly in reading between these two extremes, and in mathematics concentrated between 47.5 percent and 67.5 percent.[10]

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[10]Average percentage levels of mastery were 63.3 percent in reading and 60.8 percent in mathematics. Standard deviations were 39.7 and 36.1 for reading and mathematics, respectively.

Table 6

Distribution of Percentage Level of Mastery of Instructional Objectives that were Taught

Percentage Level of Mastery*	Reading (N = 246)		Mathematics (N = 202)	
	No. of Students	Percent	No. of Students	Percent
97.5 - 100.0	101	41.1	63	31.2
92.5 - 97.5	1	0.4	0	0.0
87.5 - 92.5	5	2.0	0	0.0
82.5 - 87.5	4	1.6	11	5.4
77.5 - 82.5	10	4.1	11	5.4
72.5 - 77.5	10	4.1	7	3.5
67.5 - 72.5	3	1.2	3	1.5
62.5 - 67.5	16	6.5	12	5.9
57.5 - 62.5	5	2.0	5	2.5
52.5 - 57.5	4	1.6	6	3.0
47.5 - 52.5	8	3.3	21	10.4
42.5 - 47.5	2	0.8	3	1.5
37.5 - 42.5	5	7.0	3	1.5
32.5 - 37.5	6	2.4	11	5.4
27.5 - 32.5	1	0.4	1	0.5
22.5 - 27.5	8	3.3	7	3.5
17.5 - 22.5	4	1.6	2	1.0
12.5 - 17.5	1	0.4	2	1.0
7.5 - 12.5	1	0.4	3	1.5
2.5 - 7.5	0	0.0	0	0.0
0.0 - 2.5	51	20.7	31	15.3

*Percentage level of mastery = (# objectives achieved)/(# objectives attempted).

The third evaluation objective was to determine the extent to which the program, as actually carried out, corresponded with the program as described in the proposal for the project. The results of this discrepancy analysis, accumulated from interviews while on-site, are summarized as follows:

1. For the most part, with the exception of the tests used for diagnosis and evaluation, the program was functioning as described in the proposal by the end of the program. Difficulties in implementation were most acute at the beginning of the program due to materials and funds for token and snacks arriving late.
2. The proposal indicates that the three teacher aides will "be employed in the corrective programs in each center." At one school a teacher aide is stationed at the front door, which is always locked, to admit any visitors. That teacher aide does not work with students in the classroom. The reason given for this action by the teacher-in-charge is that the school is in a high crime area, and in the past, there have been robberies at the school by outsiders. The aide at the door is aimed at discouraging outsiders from coming into the school.
3. Much of the equipment in the corrective mathematics and business machines classes were not useable. For example, although new keypunch machines had been installed at the schools in Manhattan and the Bronx, they had not been set-up by the time the program began. The Bronx school had a substantial number of desk calculators that were broken, and there was not sufficient monies in the budget to repair the broken machines. In addition, the

number of electrical outlets at the Bronx school was insufficient to accommodate more than a few students at one time in the business machines class.

4. The proposal indicates that the teacher-pupil ratio should not be greater than 1:10. Nonetheless, at the Brooklyn and Queens schools the ratio was slightly higher, somewhere in the neighborhood of 1:15 in some classes, especially in corrective mathematics.
5. The diagnostic/evaluative tests arrived late, were insufficiently organized, and there were not enough copies of the tests. The effect of this was to disrupt the project staff activities described in the proposal. For example, at one school teacher aides were pulled from the classroom and devoted full time to duplicating the testing materials. Teachers were forced into organizing these materials quickly, often during class. Teachers reported that their lack of training in the use of the evaluative materials sometimes disrupted class activities.
6. Money for tokens and snacks did not arrive until July 11, a full seven days, or one quarter of the program time, after school began. In three of the four schools, staff at the schools contributed their own money toward snacks and tokens. According to each teacher-in-charge, receiving the snack and token money late had a noticeable impact on the program. Some students who were enrolled at the beginning of the program dropped out because of transportation difficulties according to teachers-in-charge.

7. Although the above often represented serious disruptions of the program, several components of the program functioned smoothly. For example, a check of the student MAT grade equivalent test scores and the student's grade in school indicated that all students in the program were at least two years behind in reading and mathematics, the student activities actually carried out were identical to those described in the proposal, and the program staffing was as described.

The evaluation report for the summer 1974 program, as reported in the project proposal, recommended that the program should receive earlier approval so that better planning would result in more students attending the summer corrective program, earlier funding for maximum continuity, that business machines be used in corrective mathematics to heighten motivation, that health or guidance materials be used in corrective reading for increasing motivation, that the possibility of day care services be explored, and that the low teacher-pupil ratio be maintained. The summer 1975 program reflects some of these recommendations quite well; in other cases the recommendations have not been carried through. For example, in the 1975 program the teacher-pupil ratio has remained low for almost every class. The number of schools open was reduced from six in 1974 to four in 1975, which resulted in most schools enrolling close to their target of 75 students. Only the Bronx school enrolled significantly fewer than 75 students. In most of the schools, students were using business machines in corrective mathematics, a practice which corrective mathematics teachers reported as being a great motivating force.[11]

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[11]In only one school, the Brooklyn school, were relatively few students using business machines as instructional devices for corrective mathematics. In that school students were given an option of either practicing mathematics skills on desk calculators or typing. Most of the girls chose to practice t[illegible]ing rather than to go through the business mathematics exercises on the desk calculators.

On the other hand, late funding as reflected in teachers-in-charge receiving snack and token money one and one-half weeks after the beginning of the program remains a persistent and serious problem. Some corrective reading teachers would use health or guidance materials in their classes although this practice was extremely rare. The health and guidance materials that were supplied to students were, for the most part, provided by the guidance counselors. Finally, this evaluator observed few students in class with their infants. Most students who had already delivered had made arrangements for baby sitting. One of the main functions of the social worker was to help the student arrange for babysitting or child care. In cases where infants were with their mothers in class, there was no disruption of activities.

Chapter IV

Summary of Major Findings, Conclusions, and Recommendations

In light of the criterion established in the first evaluation objective, the corrective reading and mathematics program was a success. About 85 percent of the students enrolled in corrective mathematics and 80 percent of the students in corrective reading achieved mastery during the program of at least one instructional objective that they had not mastered prior to the program. These figures are well above the standard of 70 percent of the students achieving mastery in at least one instructional objective as a result of instruction in the program.

Further analyses examined the extent to which students mastered the instructional objectives as a result of instruction. Over 40 percent of the students in the program demonstrated mastery on more than 7.5 percent of the instructional objectives at initial testing in reading. More than 53 percent of the students in mathematics demonstrated mastery on more than a quarter of the BASE objectives at initial testing. Slightly more than one half of the students in reading and two-thirds of the students in mathematics had failed to demonstrate mastery in at least one instructional objective for which initial testing had indicated failure at the end of the program. Instruction in mathematics seemed to be most effective, in terms of students who failed objectives later showing mastery on those same objectives, in the general area of numbers and operations. Using the same criterion of judgment, instruction in reading was most effective in phonetic analysis,

structural analysis, vocabulary, and study skills. Instruction was least effective in reading comprehension. Approximately 40 percent of the students in reading and 33 percent of the students in mathematics had demonstrated mastery on all of the objectives they had failed on initial testing by the end of the program.

Results of the discrepancy analysis indicated a serious problem had occurred regarding preparation and delivery of the evaluation materials and the token and snack money. CROFT and BASE tests arrived late, unorganized, and in insufficient quantity. Teachers complained of being unprepared to use the materials and ignorant of the methods for recording progress. Snack and token money was also late, not arriving until seven days after the program had begun. This seven day period represents one quarter of the instructional time available in the summer program. The effect of this delay, reported by teachers-in-charge, was to discourage attendance at the beginning of the program.

As a result of the site-visit interviews with school personnel and the analysis of data, the following are recommended:

1. The program should be continued at the present four sites in the future. The program far exceeded the goal of 70 percent achieving mastery in at least one instructional objective in both reading and mathematics. In light of the results obtained in the summer program, the objective standard should be raised in order to more accurately reflect student attainment levels.
2. A decision needs to be made regarding the primary purpose of the CROFT and BASE tests. As they are now designed, they are primarily designed as instructional tools and for individual

evaluation rather than classroom or program evaluation. Using these tests according to the test publishers directions has far reaching implications on the way reading and mathematics are taught. For example, instruction becomes individualized rather than a group process. A teacher's role changes dramatically. The teacher becomes a classroom manager whose duties involve more monitoring progress, student evaluation, and guiding students to specific instructional materials. Conversely, the teacher devotes less time to helping individual students with specific problems. If the CROFT and BASE tests are primarily for program evaluation, perhaps they could be administered on two occasions (pre- and post-tests) as standardized tests were used in the past. By using such an approach, teachers would be able to use their own materials in instruction to a greater extent and spend less time in doing clerical work.

3. CROFT and BASE materials should be organized and a sufficient number should be sent to the schools. Teachers should also receive more instruction in how to use the testing materials in their classrooms and how to perform the necessary clerical work. As stated in the discrepancy analysis, teachers spent a great deal of time duplicating and organizing the materials after receiving them, often working a full day and over the weekend to catch up on clerical work. If CROFT and BASE are used in the future, each teacher in the program should attend a full day workshop concerning the use of the tests specifically geared to the teacher's subject.

4. Consideration should be given to using alternate diagnostic tests, especially in reading. One of the main limitations of CROFT, evidenced in part by the rather high rate at which students mastered objectives, was that it was designed for students in grades one through six. Although a high school student may have a reading grade equivalent of only 5.0, it is important to keep in mind that that student does not read like a 5th grader. Materials aimed at 5th graders are not appropriate for high school students, and using such materials often degrades the student. Teachers reported that students complained that the material was "baby stuff" and not appropriate even though these same students would miss some objectives at the low levels. The BASE test was less a problem although there were mistakes in the answer keys.
5. Some way should be found to overcome the problem of receiving snack and token money one quarter into the program. Since this appears to be a persisted problem, the effects of this action need to be thoroughly documented and the source of delay identified and confronted. A contingency plan for providing snack and token money should also be developed for each school prior to the beginning of the program and implemented where necessary.
6. More money needs to be allocated for repairs of the business machines. Having more business machines available would make the corrective mathematics program more effective. In addition, all students should work on both the typewriter and desk calculators, rather than on one of the two.

7. Consideration should be given to giving more students the MAT for both evaluation and personal knowledge. For example, although the CROFT and BASE tests provide useful information, they fail to answer the basic question of how well the student can read or do mathematics, which is always a relative question. But there is another reason, besides program evaluation, for administering the MAT, especially the reading test. Many of the teachers and counselors encourage students to enroll in the summer program because their reading level is low and they must have an 8.0 grade-equivalent to graduate. In effect, the reading grade-equivalent becomes a major performance criterion for the student. By administering the MAT reading test to older students, they can receive feedback concerning their progress and, in a certain sense, the summer program becomes accountable to the student.
8. Health and guidance materials need to be integrated more thoroughly into the corrective reading program. Although some reading teachers did use health and guidance materials in their instruction, an attempt should be made to expand this activity more thoroughly.
9. At the Queens school, a Public Health nurse was assigned to the school every day in the morning. Although the program has no responsibility or authority to assign Public Health nurses, an attempt should be made to encourage the Public Health Department to assign a nurse to each school during the summer.

Appendix

Discrepancy Checklist

Personnel at Site	P291X	P932K	P911M	P941Q
(2) corrective reading teachers				
(2) corrective math teachers				
(3) teaching aides				
guidance counselor				
social worker				
school secretary				
teacher-in-charge				
Project Activities				
File of participants giving class, scores on MAT				
Individual profile sheets				
CROFT tests				
CROFT support material				
BASE tests				
BASE support material				
Other diagnostic tests				
S.P.I.R.E.				
I.R.I.				
C.A.T.				
Sutdents assign reading exercises				
Student independent reading				
Reading lab				
Students use typewriter				
Students file, alphabetize, organize				
Teacher-pupil ratio < 1:10				
Practice with calculators				
Keypunch				

Project Activities (Con't)	P291X	P932K	P911M	P941Q
Classroom supplies arrive in timely way				
Snack money				
Tokens				
Staff interaction				
Telephone				
Xerox				
Rooms as described in proposal				

Code	Instructional Objective	Publisher	Level	Component Code 1/	Subgroup 2/	Pretest		Posttest	
						No. of Pupils		No. of Pupils from Col. 2	No. of Pupils from Col. 2
						Passing (1)	Failing (2)	Passing	Failing
1110	Division	BASE	7	60915-16	--	90	92	56	36
1116	Percent	"	7	60915-16	--	15	35	21	14
1202	Parallel Lines	"	6	60915-16	--	47	20	9	11
1205	Polygons	"	7	60915-16	--	72	77	37	40
1206	Congruence	"	7	60915-16	--	29	19	8	11
1208	Polyhedra	"	7	60915-16	--	66	46	15	31
1302	English System	"	6	60915-16	--	50	74	38	36
1305	Monetary System	"	4	60915-16	--	51	3	3	0
1306	Time and Date	"	4	60915-16	--	44	11	7	4
1601	Set Identification	"	3	60915-16	--	13	2	2	0
1606	Equations	"	7	60915-16	--	90	24	13	11
1901	Analysis	"	7	60915-16	--	46	5	1	4
1902	Solution	"	7	60915-16	--	87	64	35	29

30. Criterion Referenced Test Results: In the table below, enter the requested information about criterion referenced test results used to evaluate the effectiveness of short treatments (less than 60 hours) in reading or mathematics. Use the instructional objective codes provided on pp.2-4 of the instruction manual. Provide only those instructional objective codes which were addressed by the treatment and provide separate data for each test used and each level tested. Use additional sheets if necessary. Record in columns 2, 3 and 4 only those participants who completed both tests.

Code	Instructional Objective	Publisher	Level	Component Code 1/	Subgroup 2/	Pretest No. of Pupils Passing (1)	Pretest No. of Pupils Failing (2)	Posttest No. of Pupils from Col. 2 Passing	Posttest No. of Pupils from Col. 2 Failing
2101	Letter Recognition	Croft	I	60815-16	--	11	1	1	0
2102	Initial Consonants	"	I	60815-16	--	14	13	12	1
2103	Medial Consonants	"	I	60815-16	--	12	6	6	0
2104	Final Consonants	"	I	60815-16	--	18	32	29	3
2105	Consonant Blends	"	I	60815-16	--	2	34	27	7
2106	Vowels:Single Letrs	"	I	60815-16	--	7	22	16	6
2107	Vowels: More Letrs	"	I	60815-16	--	3	9	6	3
2108	Consonant Digraphs	"	I	60815-16	--	3	8	5	3
2109	Silent Consonants	"	I	60815-16	--	2	18	9	9
2110	Ryhming Words	"	I	60815-16	--	0	1	0	1
2201	Compound Words	"	I	60815-16	--	17	14	10	4
2202	Contractions	"	I	60815-16	--	30	39	32	7
2203	Endings	"	I	60815-16	--	11	18	14	4
2204	Prefixes	"	I	60815-16	--	26	68	51	17

1/ Indicate the component code used in previous sections of this report used to describe treatment and population.
2/ Provide data for the following groups separately: Neglected (code as N), Delinquent (code as D), Bilingual code as B) and Handicapped (code as H). Place the indicated code letter in the last column to signify the subgroup evaluated.

Code	Instructional Objective	Publisher	Level	Component Code 1/	Subgroup 2/	Pretest No. of Pupils Passing (1)	Pretest No. of Pupils Failing (2)	Posttest No. of Pupils from Col. 2 Passing	Posttest No. of Pupils from Col. 2 Failing
2205	Syllables	Croft	I	60815-16	--	8	49	31	18
2206	Prepositions	"	I	60815-16	--	3	10	2	8
2208	Punctuation	"	I	60815-16	--	1	4	1	3
2301	Antonyms	"	I	60815-16	--	14	25	22	3
2303	Homonyms	"	I	60815-16	--	11	11	6	5
2304	Synonyms	"	I	60815-16	--	8	32	27	5
2305	Word Meaning	"	I	60815-16	--	7	35	26	7
2401	Fantasy/Reality	"	I	60815-16	--	71	49	21	28
2402	Classifying	"	I	60815-16	--	112	59	35	24
2403	Inferences	"	I	60815-16	--	91	62	34	28
2404	Facts/Details	"	I	60815-16	--	63	100	57	43
2405	Follow Directions	"	I	60815-16	--	10	19	15	4
2406	Main Ideas	"	I	60815-16	--	74	89	46	43
2407	Picture Clues	"	I	60815-16	--	11	12	8	4
2408	Draw Conclusions	"	I	60815-16	--	62	41	24	17
2409	Sequence	"	I	60815-16	--	47	81	42	39
2410	Literary Forms	"	I	60815-16	--	8	6	4	2

Code	Instructional Objective	Publisher	Level	Component Code 1/	Subgroup 2/	Pretest		Posttest	
						No. of Pupils		No. of Pupils from Col. 2	No. of Pupils from Col. 2
						Passing (1)	Failing (2)	Passing	Failing
2411	Author's Purpose	Croft	I	60815-16	--	0	3	3	0
2412	Setting	"	I	60815-16	--	0	8	4	4
2413	Fact/Opinion	"	I	60815-16	--	6	25	16	9
2501	Titles	"	I	60815-16	--	16	23	22	1
2502	Aids: Visual	"	I	60815-16	--	9	8	5	3
2503	Aids: References	"	I	60815-16	--	8	30	24	6
2504	Info. Sources	"	I	60815-16	--	11	8	2	6
2505	Text Material	"	I	60815-16	--	2	11	7	4
2506	Summary	"	I	60815-16	--	5	25	23	2
1101	Pre-operations	BASE	7	60915-16	--	80	80	67	13
1102	Whole Numbers	"	6	60915-16	--	82	90	71	19
1103	Fractions	"	7	60915-16	--	68	100	61	39
1104	Decimals	"	7	60915-16	--	39	46	28	18
1106	Real Numbers	"	7	60915-16	--	75	43	28	15
1107	Addition	"	7	60915-16	--	124	73	50	23
1108	Subtraction	"	7	60915-16	--	133	61	37	24
1109	Multiplication	"	7	60915-16	--	113	79	46	33

32. Program Abstract: Please provide an abstract of your project, including aspects of the project which account for highly positive results. Provide a summary of the findings in relation to the objectives, as well as a description of the pedagogical methodology employed.

33. Date activities began 7 / 1 / 75 (Mo. Day Yr.) Date activities will terminate 8 / 12 / 75 (Mo. Day Yr.)

34. Project time span (check one): 1[ ] School Year 2[X] Summer 3[ ] 12 Mos. 4[ ] More than 1 year

35. Project is: 1[ ] New 2[X] Resubmitted 3[ ] Continuation (Title III only)

A. If project is resubmitted, please indicate number of years operated:

[ ] 2 years [X] 4 years

[ ] 3 years [ ] 5 or more years

66803

Corrective Reading and Corrective Mathematics Instruction
of Pregnant School Age Girls

Abstract

The summer corrective reading and mathematics program for pregnant school age girls was aimed at providing continuity of instruction for pregnant girls who were at least two years behind their grade level in grade equivalent test scores. The program used a diagnostic/prescriptive approach to instruction. The program tests used for diagnosis and mastery testing were used for program evaluation. Five distributions were obtained from the diagnostic/prescriptive tests results reported by classroom teachers, which formed the core of the evaluation results. Analysis of the classroom testing data indicated that about 80 percent of the students in reading and 85 percent of the students in mathematics achieved mastery in at least one instructional objective, figures that far exceeded the program goal of 70 percent achieving mastery in at least one instructional objective as a result of instruction in the program. Further analysis showed that many students had mastered a significant number of objectives prior to instruction and that some teachers administered relatively few objectives tests to their students. One reason for this was due to the relatively low levels of reading and mathematics skills measured by the test materials. Analysis of student objective achievement by objective indicated that reading instruction was more effective in phonetic analysis, structural analysis, vocabulary, and study skills than in reading comprehension. In mathematics, objective achievement was most prominent in numbers and operations. At the program's conclusion, 40 percent of the students in reading and 33 percent of the students in mathematics had achieved mastery on all objectives for which they had failed. A discrepancy analysis indicated that there were serious problems

associated with a) snack and transportation token money being delivered to the school in a timely manner and b) the number, organization, and instructions for implementing the diagnostic/prescriptive tests.